Oak Ridge Reservation Educational Resource Guide

Sponsored by the Oak Ridge Site Specific Advisory Board

ORO0506

Introduction

The Oak Ridge Reservation Educational Resource Guide is authored by the Stewardship Committee's Education Task Team of the Oak Ridge Site Specific Advisory Board (ORSSAB). The Guide received input from teachers, students, the general public and committee members. The Guide was written to introduce the concepts and issues of radiological and chemical contamination, environmental management, and stewardship to middle and high school students, so that as adults they can influence the environmental management and long-term stewardship decisions of the future.

This Guide provides materials and resources for introducing the legacy of waste generated and the scope of the environmental problems resulting from World War II and the Cold War. A variety of media resources (videos, web sites, speakers and documents) are identified that may be used as teaching tools to account for different learning styles among students and different teaching styles among teachers. The age level and suitability of the material for students are indicated where appropriate.

The Guide includes:

- A list of the addresses and phone numbers of **local agency support offices** where information can be obtained, such as: Department of Energy Information Center, Tennessee Department of Environment and Conservation and the Oak Ridge Site Specific Advisory Board Support Office. The individuals staffing these offices are extremely helpful and are competent in dealing with the public.
- A list of **national resources** including web sites for general background information on science and radiation (e.g., U.S. Environmental Protection Agency, and RadWaste). This list also includes specific web sites for government information, legacy waste information, Department of Energy information, and stewardship information.
- The **speakers' bureaus** offer a diverse number of topics, contact names, and phone numbers for scheduling dynamic volunteer speakers.
- The **video library** offers a broad range of videos ranging from 5 minutes in length to two hours. The level of video material varies from introductory to detailed and covers historical cultural, scientific and technological issues. The Oak Ridge Site Specific Advisory Board Support Office will maintain video evaluation sheets to assist teachers in selecting appropriate videos for their classroom.
- A list of **reference books and documents** is provided for covering the background and current issues of the Department of Energy's activities.
- **Department of Energy fact sheets** are included which summarize the Accelerated Cleanup Plan, Federal Facility Agreement, the Administrative Record for Oak Ridge Operations, the Oak Ridge Site Specific Advisory Board, East Tennessee Technology Park, Oak Ridge National Laboratory, and Y-12 National Security Complex.

The Committee will periodically review and update the material printed in this Guide. The committee welcomes comments, constructive criticism, suggestions, additions and deletions and we encourage feedback from teachers and students within the classroom. Improvement of the Guide depends on the dialogue we establish with users of the Guide.

The authors of this Guide would like to express the faith we have that the next generation will accept the environmental management stewardship "baton"; that they will become publicly aware and publicly involved; and they will accept the responsibility of ensuring a safe and healthy environment for those living and working in the Oak Ridge area.

We would like to express appreciation to Sheree Black for her many years of service to the Oak Ridge Site Specific Advisory Board and the Stewardship Committee.

Stewardship Education Committee

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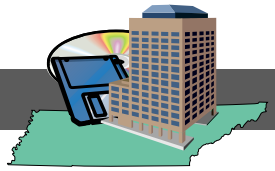
Local Information Resources



American Museum of Science and Energy (AMSE)
300 South Tulane Avenue
Oak Ridge, TN 37830
Phone: (865) 576-3200
Web site: *www.amse.org*
E-mail: *info@amse.org*
Hours: Tuesday - Saturday 9 a.m. to 5 p.m.
Sunday 1 p.m. To 5 p.m.
Closed Mondays

The American Museum of Science and Energy's Education Department has developed educational programs based on four primary goals with thematic subdivisions:

- Process of Science
- Concepts of Science
- Habits of Mind
- Science in Society

The following exhibit areas are available for touring: Oak Ridge Story, Age of the Automobile, Exploration Station, Energy: The American Experience, Y-12 and National Defense, Earth's Energy Resources, and the World of the Atom.

The Museum's programs and exhibit tours can be scheduled for group reservations.

DOE Information Center
475 Oak Ridge Turnpike
Oak Ridge, TN 37831
Phone: (865) 241-4780
E-mail: doeic@comcast.net
Web site: *www.oakridge.doe.gov/info_cntr*

The public can visit the DOE Information Center and search for useful documents with staff assistance. The public may inspect and copy documents in person or request via phone, fax, e-mail, or U.S. Mail. There is no fee for copies of documents.

The DOE Information Center is operated to satisfy the requirements of the Freedom of Information Act (FOIA), which provides access to all federal agency records except those prohibited from release by exemptions (reasons an agency may deny access to a requester).

Existing collections include environment, safety, and health-related information (use of beryllium at DOE facilities, epidemiology studies, K-25 occupational illnesses, Molten Salt Reactor Experiment, Tennessee health studies); declassified and historical records (large-scale declassification review and human radiation experimentation); documents of administrative and general public interest (public document section and Toxic Substances Control Act Incinerator collection); procurement related records (Oak Ridge National Laboratory, DOE-ORO Protective Services). Archived information is also available.

The center also serves as a public repository for documents related to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) cleanup of the Oak Ridge Reservation, and provides other types of information to the community. The center is a storehouse for documents related to Environmental Management (EM) Program activities. It keeps major documents leading up to a Record of Decision as determined by the Federal Facility Agreement for the Oak Ridge Reservation. These documents include remedial investigation/ feasibility studies, remedial action or removal action work plans, and proposed plans. The Center also has End Use Working Group information; Bechtel Jacobs contractor information; Site Specific Advisory Board information. Several newsletters are available such as the *Public Involvement News* and over 50 fact sheets on various EM projects providing an abundance of information on a wide variety of topics. Additional documents are available on a wide range of EM topics.

Oak Ridge Public Library
1401 Oak Ridge Turnpike
Oak Ridge, TN 37830
Phone: (865) 425-3457
Web site:
http://www.ci.oak-ridge.tn.us/lib-html/orlib.htm
Hours: Monday-Thursday 10 a.m. to 9 p.m.
Friday 10 a.m. to 6 p.m.
Saturday 9 a.m. to 6 p.m., Sunday 2 p.m. to 6 p.m.
(closed Sundays in summer)

The Oak Ridge Public Library keeps public notice records from DOE, Oak Ridge Health Studies, and other organizations; selected DOE public review documents; and selected permit applications and reapplications. The Oak Ridge Room offers a good selection of early historical documentation about Oak Ridge, including site maps and blueprints. Oak Ridge Room materials are catalogued separately from the main collection. Library information and search resources are available at the library's web site.

Tennessee Department of Environment and Conservation (TDEC)
http://www.state.tn.us/environment
761 Emory Valley Road
Oak Ridge, TN 37830
Phone (865) 481-0995
Fax (865) 482-1835
The primary objectives of the TDEC are to assist in cleanup decisions and to assure the citizens of Tennessee that their health, safety, and environment are being protected during environmental restoration and ongoing activities at the Oak Ridge Reservation (ORR). The purpose of the TDEC Department of Energy (DOE) Division is to ensure that the environmental impacts associated with past and present activities at the DOE ORR are thoroughly investigated and maintained.

Local Information Resources (cont.)

University of Tennessee Library (UTK)
Reference Room/Government Documents
1015 Volunteer Boulevard
Knoxville, TN 37996-1000
Phone: (865) 974-4171
Web site: *http://www.lib.utk.edu/gpo/govdoc.html*
Hours: Monday-Thursday 7:30 a.m. to midnight; Friday 7:30 a.m. to 6 p.m., Saturday 10 a.m. to 6 p.m.; Sunday 1 p.m. to midnight. Hours vary during the summer and between semesters.

UTK is part of the Federal Depository Library Program, which provides free public access to U.S. government information by distributing information products produced by federal agencies to depository libraries located throughout the nation. Maps and Geographic Information System materials from federal agencies are sent to the UTK Map Library. Other depository libraries in the area include the UTK Law Library and Knox County Public Library.

The UTK documents collection provides information about specialized types of materials.

Volunteers in Education Team (VET)
Alex Boerner
VET Committee Chair
ORAU MS-19
P.O. Box 117
Oak Ridge, TN 37831-0117
Phone (865) 574-0951
Fax (865) 241-3497
E-mail: *vet@orau.gov*
http://www.orau.org/vet/vet.htm
The Oak Ridge Associated Universities (ORAU) Volunteers in Education Team (VET) is a group of ORAU employees who volunteer their time to help enhance education in East Tennessee. VET supports science, mathematics, technology, and computer science education and the development of professional skills of K-12 students and teachers in East Tennessee through a variety of activities and donations.

Local Web Sites

Bechtel/Jacobs Company L.L.C.
http://www.bechteljacobs.com

Bechtel Jacobs Company L.L.C. is the management and integration contractor for the U.S. Department of Energy's Oak Ridge Operations Office, located in Oak Ridge. The company is responsible for environmental cleanup management and management of depleted uranium hexafluoride cylinders in Oak Ridge, Tennessee; Paducah, Kentucky; and Portsmouth, Ohio. Bechtel Jacobs Company L.L.C. supports DOE in a reindustralization program to find commercial uses for Oak Ridge facilities that no longer have a mission.

BWXT Y-12
http://www.y12.doe.gov/bwxt/home.html

BWXT Y-12, LLC, a BWXT-Bechtel Enterprise, is the managing contractor of the Y-12 National Security Complex. Y-12 has developed expertise in many aspects of defense related capability and manufacturing technology. When combined with the research and development at ORNL, the skill and knowledge found at Y-12 form a formidable resource for the nation's industrial community.

DOE Information Center
Http://www.oro.doe.gov/info_cntr

Want to see records pertaining to the Toxic Substances Control Act Incinerator? How about information on beryllium use at the East Tennessee Technology Park? The Reading Room has over 8000 titles on that subject alone. Epidemiology studies, declassified and historical records, and much more make this site an information bonanza for people interested in these and other topics.

DOE Oak Ridge Operations
http://www.oakridge.doe.gov

The site presents Oak Ridge Operations' major programs in science, environmental management, assets utilization and uranium programs.

DOE Oak Ridge Environmental Management Site
http://www.oakridge.doe.gov/em

This site provides an overview of the EM Program, links to press releases, the stakeholder calendar, and to the *Environmental Update Newsletter.* This compilation of links is a good local resource for stakeholders. Environmental Management (EM) is one of the largest Oak Ridge programs, with cleanup programs underway to correct the legacy waste remaining from up to 50 years of energy research and weapons production as well as an aggressive effort to manage currently generated wastes.

Ed Westcott Photography
http://sunsite.utk.edu/westcott

This web site provides a link to an online exhibit of photographs by Ed Westcott during the years 1942 to 1946 in the "secret city" of Oak Ridge, Tennessee. He had a double role as government documentarian and civilian photojournalist.

ETTP Reindustrialization
http://www.ettpreuse.com

The U.S. Department of Energy's East Tennessee Technology Park (ETTP) is getting a second life through a unique process called Reindustrialization. Part of the vast complex, located in Oak Ridge, is available for lease. Facilities, equipment, and reusable materials are available to companies interested in leasing, performing cleanup work, or recycling.

Learn all about reindustrialization and how it works at this web site.

Key Figures in the Manhattan Project
http://www.me.utexas.edu/~uer/manhattan/people

This site provides short biographies of important and essential scientists involved in the research and development of the Manhattan Project. The biographies are concisely placed in scientific, political and sociological context. The list of figures includes Leo Szilard, Albert Einstein, Glen Seaborg, Neils Bohr, Richard Feyman, Enrico Fermi, J.R. Oppenheimer, and General Leslie Groves.

NNSA Y-12 Area Office
http://www.oro.doe.gov/nnsa/

The mission of the Oak Ridge Y-12 National Security Complex focuses on remanufacturing, surveillance, and assessment of weapons' components.

Oak Ridge Site Specific Advisory Board (ORSSAB)
http://www.oakridge.doe.gov/em/ssab

The ORSSAB home page tells all about the Oak Ridge Site Specific Advisory Board. You can quickly download all Board meeting minutes, recommendations, ORSSAB publications, Board members' biographies and updates of meeting schedules and agendas. It also includes links to many other pertinent web sites.

Local Web Sites (cont.)

Oak Ridge National Laboratory
http://www.ornl.gov

Oak Ridge National Laboratory (ORNL) is a multiprogram science and technology laboratory managed for the U.S. Department of Energy by UT-Battelle, L.L.C. Scientists and engineers at ORNL conduct basic and applied research and development to create scientific knowledge and technological solutions that strengthen the nation's leadership in key areas of science; increase the availability of clean, abundant energy; restore and protect the environment; and contribute to national security.

Oak Ridge National Laboratory History **
http://www.ornl.gov/history

This web page has links to several excellent ORNL general documents and technical reports discussing Oak Ridge history and nuclear science development. There is an excellent link to a time line discussing the major nuclear/historical developments by decades.

Tennessee Department of Environment and Conservation DOE Oversight Division
http://www.state.tn.us/environment/doeo

This site provides an overview of TDEC programs, Tennessee Oversight Agreement, activities and reports, and links to other pertinent sites.

UT-Battelle Management Contractor for DOE's Oak Ridge National Laboratory
http://www.ut-battelle.org/

A not for profit company, known as UT-Battelle, has been established for the sole purpose of managing and operating the Oak Ridge National Laboratory (ORNL). Both UT and Battelle are committed to serving the U.S. DOE by enhancing ORNL's leadership in scientific research, laboratory operations, and community service.

Volunteers in Education Team
http://www.orau.org/vet/educa.htm

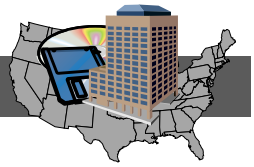
This site is for parents, students, and teachers and provides an excellent resource for lesson plans, educational games, interactive activities, educational materials, free software and so much more. There are links to career search, education and resources, especially for parents, government agencies, history lessons, science and energy, virtual learning and others.

Y-12 National Security Complex
http://www.y12.doe.gov

Operated by BWXT Y12, L.L.C., the Department of Energy's Y-12 National Security Complex is a manufacturing facility that plays an integral role in DOE's nuclear weapons complex.

Y-12 DOE Defense Program has developed a forward-looking, responsive program which meets the U.S. Department of Energy's requirements in support of U.S. nuclear defense policies. Learn about Y-12 yesterday, today, and tomorrow, its missions and much more at this site.

** Excellent resource sites for teachers and classroom material.



Center for Environmental Management Information (CEMI)
P.O. Box 23769
Washington, DC 20026-3769
Phone: 1-800-7-EM DATA (1-800-736-3282)
Web site: *http://www.em.doe.gov/public/cemi.html*
E-mail: *eminfo@cemi.org*
Hours: 9 a.m. to 6 p.m.

Established in 1993, CEMI serves as DOE's primary source for information on the EM Program. CEMI offers three primary services: (1) a library and resource center; (2) publications, exhibits, and briefings; and (3) World-Wide Web design, support, and outreach.

The library is located one block from DOE Headquarters in Washington, DC. It offers both general and technical publications, videos, and some specialized teaching materials; a toll-free phone number; a computer terminal for on-line research; and a distribution system that provides materials to the public free of charge. It is staffed with information specialists who are trained to answer callers' questions and assist them with their research. CEMI also serves as a point of contact and refers callers to other information centers or DOE offices, as needed. CEMI maintains a library of the most up-to-date program materials available; documents, pamphlets, news clippings, records of decision, environmental impact statements, and videos. Each document is logged into CEMI's text base and is made available to the public within 48 hours of the time it was received.

CEMI provides information on EM initiatives through publications and exhibits and produces a quarterly newsletter, *EM Progress*, that publicizes waste cleanup efforts and opportunities for public involvement around the nation.

CEMI developed and maintains EM's Internet site. The EM home page contains CEMI's publication order form, which customers can use to submit their information requests.

Government Printing Office (GPO)
Office of Congressional, Legislative, and Public Affairs (General inquiries)
Washington, DC 20402
Web site: *http://www.gpo.gov*
Phone: (202) 512-1880
Fax: (202) 512-2250

GPO produces and procures printed and electronic publications for Congress and the individual departments and establishments of the federal government. It catalogs, distributes, and sells government publications in printed and electronic formats. It administers the Federal Depository Library Program through which a comprehensive range of government publications is made available for the free use by the public in 1400 libraries throughout the country. GPO also provides online access to more than 70 databases of federal government publications, including the *Congressional Record, Code of Federal Regulations,* and the *Federal Register*.

National Technical Information Service (NTIS)
Technology Administration
U.S. Department of Commerce
Springfield, VA 22161
Phone: 1-800-553-NTIS (6847) or (703) 605-6000
Fax: (703) 605-6900
Web site: *http://www.ntis.gov*

NTIS is the federal government's central source for the sale of scientific, technical, engineering, and related business information produced by or for the U.S. Government and complementary material from international sources. Nearly 3 million products are available from NTIS. The collection of titles includes business and management studies, international marketing reports, material and chemical science data, technology innovations, and training tools. Information is available in various formats: printed reports, CD-ROMS, computer tapes and diskettes, online, audio cassettes, videocassettes, and microfiche. For more information, call Pat McNutt, NTIS Collection Management Solutions, at (703) 605-6543.

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National Web Sites

Atomic Archive
http://www.atomicarchive.com
This web site reviews the complex historical events giving rise to the research and development of the atomic bomb. It also explores the science and consequences of a nuclear bomb. The site has links to informative nuclear science pages, information on historical documents, treaties, a nuclear history timeline, historical photographs, animations and an almanac with a collection of data, nuclear stockpiles and facilities.

Ben's Guide, Government Printing Office
*http://bensguide.gpo.gov/index.html***
This site contains links about our nation, historical documents, branches of government, how laws are made, national versus state government, election process, citizenship, the national high school debate topic, games and activities, glossary, and U.S. Government Web Sites for students in grades K-12.

Cold War International History Project, Woodrow Wilson International Center for Scholars
http://cwihp.si.edu/
This web page is responsible for disseminating new information and perspectives on the history of the Cold War with emphasis on new findings from previously inaccessible sources from the former Communist world.

DOE Headquarter's Environmental Management Site**
http://www.em.doe.gov
This site provides an overview of the Environmental Management program across the country with links to every state. There are also links to press releases, budget, laws and regulations, publications plus many others. The link called *"Interested Audiences - Teachers and Students"* provides teaching resources.

DOE Information Bridge
Http://www.osti.gov/bridge
The Information Bridge provides an open source to full-text and bibliographic records of Department of Energy (DOE) research and development reports in physics, chemistry, materials, biology, energy technologies, engineering, computer and information science, and renewable energy.

DOE's OpenNet Home Page **
http://www.osti.gov/opennet/
The OpenNet web page provides information on DOE's openness policy, openness press conferences and additional openness information and resources. The web site also provides searching capabilities and links to the DOE's Openness Historical Records and Historical Weapons film databases.

DOE Web Site**
http://www.energy.gov
This site provides an overview of the Department of Energy. This site has a "School" link with topics about energy efficiency, environmental quality, national security, science & technology, and sources & production with resources for teachers.

EPA
http://www.epa.gov
EPA's site is a gold mine for information seekers. Environmental publications, statistics, research databases, and general information are all available at this site.

Use *www.epa.gov/epahome/educational.htm*** to find curriculum resources and activities to use in the classroom on different topics.

Radiation Protection Web Site sponsored by EPA**
http://www.epa.gov/radiation
This site assists the public in understanding radiation, becoming aware of radiation sources, protecting people and the environment, managing radioactive materials and waste, responding to accidents and emergencies, and cleaning up radioactive sites.

There is a link to a section especially designed for students and teachers. A radiation resource kit can be ordered for free online at *www.nsc.org/ehc/rad.htm.*

FedWorld
http://www.fedworld.gov
If it's U.S. government related, you can probably get there from here. Links to the White House and Congress make it easy to zip off e-mail messages to elected officials, and you can also access almost any other U.S. government agency or program you're interested in. You can browse databases, download forms, purchase reports, and link to scores of related sites all from this one web page.

Health Physics Society Documents **
http://www.hps.org/documents/
The Health Physics Society's document page provides links to PowerPoint presentations and PDF files on a variety of topics (e.g., radiation, food irradiation, what we know and what we don't know about radiation health effects, radiation standards for site cleanup and restoration). The web page provides approximately 50 links to various topic presentations/papers.

National Web Sites (cont.)

Jefferson Lab
http://education.jlab.org
Jefferson Lab has an excellent Science Education home page. It has links for teachers, resources, student zone, and games and puzzles.

The Jefferson Lab has a Science Series Video Lending Library with an extensive selection of videos in the following areas: Biology and Medicine, Engineering and Applications, Environment and Earth Science, Jefferson Lab/CEBAF, and Physics and Chemistry.
Jefferson Lab Science Education
12000 Jefferson Ave., MS-16C
Newport News, VA 23606
Phone: (757) 269-7560
Fax: (757) 269-5065

Office of Scientific and Technical Information (OSTI)
http://www.osti.gov
OSTI is responsible for leading DOE's Technical Information Management Program. It provides direction and coordination for the dissemination of scientific and technical information resulting from DOE research and development and environmental programs. OSTI created and maintains the DOE Information Bridge and is a good jumping-off point for several EM-related sites, such as the DOE Research and Development Accomplishment Database and Energy Files: the Virtual Library of Energy Science and Technology.

Radwaste Teacher's Corner **
http://www.radwaste.org/teacher.htm
The purpose of this web page is to assist teachers in preparing lessons and assignments on nuclear and radiation related topics. It includes links to educators' associations, nuclear education programs, nuclear facts and figures, nuclear history, famous people, classroom projects, classroom tools, museums, photo gallery, general science education and other resources. (Approximately 350 links).

** Excellent resource sites for teachers and classroom material.

National Stewardship Web Sites

CRESP, Re: Stewardship Issues at DOE sites
http://www.cresp.org or
http://www.instrm.org/cresp1/cresp1/stewardship.html
The Consortium for Risk Evaluation with Stakeholder Participation (CRESP) web site lists CRESP publications pertinent to stewardship issues at Department of Energy sites in the following subject areas: future land use, economic considerations and biomonitoring for stewardship.

DOE Environmental Management Office of Long Term Stewardship
http://lts.apps.em.doe.gov/
The home page for the Department of Energy's Office of Long Term Stewardship web page assists in the coordination and communication of long term stewardship activities across the DOE complex. The DOE report "National Study on Long Term Stewardship Activities" and NDAA report "Long Term Stewardship Report to Congress" are linked to the site through the Stewardship Information Center.

Energy Community Alliances Media Advisory on Stewardship
http://www.eli.org/whatsnew/01media/localdoe.htm
The web page provides a link to the report "Role of Local Governments in Long Term Stewardship" (3/9/2001). ECA and ELI issued the report outlining the difficulties DOE and state, local and tribal governments have in managing contaminated lands. The report examines the capacity of local governments to participate in long term stewardship. Three case studies are presented including Oak Ridge.

Joint Institute for Energy and Environment
http://www.jiee.org/
Joint Institute for Energy and Environment (JIEE) was established by ORNL, TVA , and UT to conduct collaborative research related to energy, environment, and economics. In August 2002 JIEE published "DOE Legacy Waste Cleanup and Stewardship: Beyond the Top to Bottom Review" by Milton Russell. This 58 page document summarizes in easy to understand language a set of propositions and framework that should guide DOE in formulating its mission and implementing its waste management responsibilities. The report "holds that the nuclear waste legacy presents a daunting technical/economic challenge wrapped up in a set of values . . . The values span generations; hazardous nuclear waste is not a problem to be solved, but instead is a situation to be managed - in perpetuity."

LTS in Nuclear Weapons Complex-A State's Perspective
http://ndep.state.nv.us/lts/press.htm
Department of Energy Long Term Stewardship Press news web page sponsored by the National Governors' Association and the Federal Facilities Task Force. This page provides links to current news items relative to long term stewardship and federal facilities.

LTS Workshop, Grand Junction, CO-4th Annual Workshop, Sample Stewardship Dilemmas with breakout session worksheets and solutions**
http://www.gjo.doe.gov/programs/ltsm/general/events/01worksh/breakout.html
The 4th Annual Long-Term Stewardship Workshop was designed to give attendees a hands-on experience in planning a long-term stewardship program. To ensure full and rich dialogue with regard to stewardship planning, breakout groups were set up so attendees could participate in identifying the important elements of a stewardship management plan. Each breakout group used a fictional site containing predetermined characteristics, setting, and boundaries to apply the information presented in general session to develop a long-term stewardship technical plan. Comments collected on the draft guidance document during the discussions were presented to the DOE's Office of Long-Term Stewardship for incorporation into the guidance documentation. The four fictional site fact sheets developed by each breakout group are included for view.

Resources for the Future: Creating a Successful LTS Program for DOE Sites
http://www.rff.org/conf_workshops/files/stewardship98.htm
The web site provides a summary of the RFF workshop for "Creating a Successful Long Term Stewardship Program for Department of Energy Sites in the Nuclear Weapons Complex" and a link to the paper "Long Term Stewardship and the Nuclear Weapons Complex: The Challenge Ahead."

Rocky Flats Citizens Advisory Board documents
http://www.rfcab.org/cabdocs.html
Rocky Flats CAB's Stewardship Working Group has prepared a report (June 2002) titled "The Rocky Flats Stewardship Toolbox: Tools for Long-Term Planning." The document provides an analytical matrix designed to help decision-makers ensure that long-term stewardship requirements are thoroughly considered during remedy selection process.

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Speakers' Bureaus

Oak Ridge Site Specific Advisory Board Speakers' Bureau
Contact: Pete Osborne
Public Affairs Coordinator
P.O. Box 2001, EM-90
Oak Ridge, TN 37831
Phone: (865) 576-1590
Fax: (865) 576-5333
E-mail: *5PL@BechtelJacobs.org*
http://www.oakridge.doe.gov/em/ssab

The Oak Ridge Site Specific Advisory Board Speakers' Bureau provides presentations to local civic, educational, and governmental organizations to encourage participation in Board activities and to educate and communicate with local stakeholders about ORSSAB environmental management activities, stewardship activities, and maintain an ongoing dialogue with the community.

Y-12 National Security Complex Speakers' Bureau
Contact: Alice Brandon
Y-12 Public Affairs
Phone: (865) 576-2963
http://www.y12.doe.gov

The Department of Energy's (DOE) Y-12 National Security Complex is a manufacturing facility that plays an integral role in DOE's Nuclear Weapons complex. Y-12's DOE Defense Program has developed a forward-looking, responsive program which meets the DOE's requirements in support of U.S. nuclear defense policies. There are also many other capabilities at the Y-12 Plant such as research and development, environmental restoration, and modernization.

Schools, clubs, organizations in the area may learn about the Y-12 National Security Complex from guest speakers provided by the BWXT Y-12 Speakers' Bureau.

Staff members for BWXT Y-12 are available, free of charge, to discuss their work in such areas as safety, environmental protection and compliance, information technology, engineering, emergency management, national defense and modernization of the Y-12 Complex.

Speakers are available for many other subject areas, including professional and career areas.

Oak Ridge National Laboratory Speakers' Bureau
Contact: Fred Strohl
ORNL's Office of Communications and Community Outreach
Phone: (865) 574-4165
E-mail: *strohlhf@ornl.gov*
http://www.ornl.gov/news/cco/speakers.htm
Advanced notice of one month for scheduling is requested. There is no charge.

The missions of the Department of Energy (DOE) Oak Ridge installations touch many areas of vital public interest and concerns including energy supply and demand, basic and applied scientific research, technological innovation and economic development, environmental protection, environmental management, national defense, technology transferring, and human health to name a few.

As a result, Oak Ridge National Laboratory (ORNL) staff members are called upon frequently to discuss their work and its importance to the nation. To meet this interest, a centralized Speakers' Bureau was established in 1975. Since then, it has served as a focal point for arrangements between outside organizations seeking speakers and company staff members who have volunteered their services within the limits of available time and program commitments.

Below are listed six major topic areas with subtopics. For each subtopic listed, there are many presentations that can be provided for that particular topic.

1. Energy Production and End-Use Technologies:
These topics generally refer to energy and energy-use and production issues, as well as opportunities in the area of renewable energy.
- Building Technology & Energy Efficiency
- Energy Security
- Fuel Economy Strategies
- Future Energy Issues
- Future of Energy in the 21st Century
- Hybrid Lighting
- New Generation Vehicles
- New Opportunities In Fossil Energy
- Renewable Energy Sources
- Superconductivity
- Vision 2020 for the Petrochemical Industry

2. Biological and Environmental Science & Technology:
Most of these topics deal with issues covering environment and biology, including a lot of related research taking place throughout the Oak Ridge Reservation area. Topics about mice and the human genome are currently popular at ORNL. There is a lot of material here that students can appreciate.
- Biomass Research
- Biotechnology and Algae
- Designer Genes
- Forest Health In A Changing Chemical and Physical Climate
- Future of Climate Change
- Global Warming
- ORNL's Biomass Initiative
- Public Acceptance of Waste Management Technologies
- Southern Appalachian Man and the Biosphere Program
- Spaceship Earth: Our Restless Planet

- Status of the Human Genome Project
- The Legacy of Waste and How to Deal With It
- Using Mice to Determine What Genes Do
- Vet Perspective On Laboratory Animal Studies
- Wildlife As Sentinels of Contamination

3. Advanced Materials Synthesis, Processing Characterization:
These topics deal more with transportation, lighter metals and national security. The most interesting topics for students are enforcement and forensics.
- Advanced Materials Research
- Improving National Defense Logistics
- Law Enforcement and Forensics
- New Automobiles and Fuels for Cleaner Transportation

4. Nuclear Science: The most highly recommended topic is the Spallation Neutron Source topic. It is a facility under construction that will become one of the primary programs of ORNL for years to come. The history of neutron science dates to Manhattan Project days when the Graphite Reactor was the focus of this work.
- DOE's Nuclear Criticality Safety Program
- Nuclear Technology Sciences
- Preventing the Proliferation of Nuclear Weapons
- Spallation Neutron Source

5. Computational Science & Advanced Computing: This is another interesting topic area for students. Robotics is especially good.
- Computer Visualization
- Crystallography and Its Influence On Art
- Robotics Research
- The Making of a Star

6. Technology Transfer & ORNL Partnerships: The talk on engineering careers is good for older high school students.
- About Careers: What Do Engineers Do? (youth)
- Early History of ORNL
- How ORNL Supports Entrepreneurs
- How to Tap ORNL User Facilities
- Human Resources: Managing Conflict Resolution, Conflict and Diversity
- Scientific Recruiting and Employment
- Technology Transfer and Economic Development in East Tennessee
- The new AMSE
- Upgrading ORNL Facilities
- Workforce Diversity

The Oak Ridge Institute for Science and Education (ORISE) Speakers' Bureau
Contact: Pam Bonee
Speakers' Bureau Coordinator
Oak Ridge Associated Universities
P.O. Box 117, MS 44
Oak Ridge, TN 37831
Phone: (865) 576-3147
Fax: (865) 241-2923
E-mail: *speakers@orau.gov*
http://www.orau.org/speakers/

The ORISE Speakers' Bureau is a community resource designed to help area schools, organizations, and businesses have access to subject matter experts. Topics include, but are not limited to:
- Clinical Care of the Radiation Patient
- Crisis Communication
- Diversity Awareness and Minority Issues
- Emergency Preparedness
- Enhanced School Safety
- Environmental Law
- Environmental Assessments & Site Verification
- Health Physics
- Information Technology
- Management and Business Issues
- ORAU and ORISE: What we do
- Radiation Accidents
- REAC/TS: An International Resource
- Safety and Emergency Management
- Science and Education
- The NSF Graduate Research Fellowship Program
- Strategic Planning
- Worker Health
- Workplace Violence

Volunteers in Education Team (VET)
Alex Boerner
VET Committee Chair
ORAU MS-19
P.O. Box 117
Oak Ridge, TN 37831-0117
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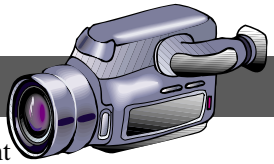
Fax (865) 241-3497
E-mail: *vet@orau.gov*
http://www.orau.org/vet/vet.htm
The Oak Ridge Associated Universities (ORAU) Volunteers in Education Team (VET) is a group of ORAU employees who volunteer their time to help enhance education in East Tennessee. VET supports science, mathematics, technology, and computer science education and the development of professional skills of K-12 students and teachers in East Tennessee through a variety of activities and donations.

Video Library



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DOE Information Center,
Phone: (865)241-4780,
Fax: (865) 574-3521,
E-mail: doeic@comcast.net

HISTORY

Building Bombs: The Legacy (PBS, NEA) (48 minutes) Good

The video introduces Aiken, South Carolina and the Department of Energy's Savannah River Site. The history of the Savannah River Site is reviewed emphasizing the construction of the plant for bomb materials and the early handling and disposal of the hazardous and radioactive waste on site. The video proceeds to discuss the "down side of nuclear prosperity" and the "high yield hangover of a forty year binge." The radioactive contaminants of greatest concern are plutonium and tritium necessary for the manufacture of hydrogen bombs. Some discussion revolves around the adequacy of environmental laws, Department of Energy's oversight and DuPont's compliance. Possible worker exposure and worker sickness is presented. Some pertinent questions addressed: What does cleanup mean? What should it cost? Who can be trusted to keep watch?

Moneyline Series (CNN): Nuclear Graveyard (approximately 2 hours, several segments) Good

1. A brief presentation of the reliance on nuclear power and power plant nuclear waste reprocessing or disposal in France, Germany, Switzerland, Belgium, and the Soviet Union.
2. An interview with Dr. Kline indicates a strong public emotional response to storage of nuclear waste. Yucca Mountain repository is essential to the U.S. nuclear program that can provide electricity and environmentally sound waste disposal and storage. The government and media have not adequately conveyed to the public the safety of Yucca Mt. and the results of the technical studies.
3. The U.S. Energy program is too dependent on oil. The risk of nuclear power has become an emotional subject. Education of the public is essential to end the mystique surrounding nuclear power and waste disposal and to convey that geological disposal is safe. A safe repository for spent fuel is necessary to meeting electrical demands that will triple in the next 40 years. The video presents the geological characteristics of Yucca Mt. that make it suitable for long-term storage (12,000 years and longer) of nuclear waste.
4. An interesting and excellent discussion between Dr. Teller (Hoover Institute) and Dr. Weinberg (ORNL) mediated by CNN's Moneyline host. Dr. Teller and Dr. Weinberg discuss the usefulness of by-products of the nuclear process. They discuss the public's emotional response to nuclear waste storage/disposal and the media's responsibility to convey to the public that the technical community has the solution for handling nuclear waste.

ENVIRONMENTAL MANAGEMENT OVERVIEW

Environmental Management: An Overview (19 minutes)

DOE's Environmental Management Program Office of Waste Management develops policy and program guidance related to waste management issues and coordinates, integrates, and oversees the national Waste Management Program to protect people and the environment by providing a safe, effective, and efficient system to minimize, treat, store, and dispose of DOE wastes in a timely manner.

Environmental Management Program Integration Initiation; Achieving DOE's Accelerated Cleanup (14 min.)

Meeting the Challenge: Environmental Restoration and Waste Management (16:14 min.)

This video gives a history and current activities of Y-12, Oak Ridge National Laboratory and East Tennessee Technology Park. It also tells about the waste management practices that are being used to clean up the legacy waste that was left behind following the Manhattan project.

OAK RIDGE FACILITIES

East Tennessee Technology Park

Oak Ridge Gaseous Diffusion Plant(ORGDP) - 40 years: An Enriching Experience (20 min.)

This video describes reminiscent overview of the history of ORGDP from the 1940's to the 1980's shortly before the plant was shut down and turned into an environmental cleanup site. It does not address the criteria of environmental management and regulations, but it may be of interest to area students from a historical perspective.

The History of K-25

This videotape gives excellent overview of the history and mission of the Oak Ridge Gaseous Diffusion Plant.

Oak Ridge National Laboratory

Bringing Science to Life (21:22 min.)

This videotape gives an excellent picture of the varied scientific research and development missions of Oak Ridge National Laboratory.

Y-12 National Security Complex
What We Do At Y-12 (11 min.)
This video, although not specifically dealing with any environmental or regulatory matters, provides an overview of the Y-12 National Security Complex and the importance of its mission to the nation.

WASTE MANAGEMENT
Envirocare (approximately 10 minutes) Good
The video presents a description of the commercial radioactive waste disposal site located in Clive, Nevada. The video briefly addresses the history of the need for Envirocare and the selection of Clive as the site for Envirocare. It defines and describes the four types of wastes accepted at Envirocare and the separate disposal of each of these waste types. The video addresses the transportation means and routes to Envirocare and subsequent handling of waste once it reaches Envirocare (sampling, analysis, treatment of bags/drums, barrels/boxes). A discussion of the physical aspects of the landfill includes "cut and cover" of cells, low permeability embankments, etc.

Focus Area Videos (40 minutes)
High Level Waste Tank Remediation; Mixed Waste Characterization, Treatment, & Disposal; Landfill Stabilization Contaminant Plume Containment & Remediation; Facility Transitioning, Decommissioning, & Final Disposition

Half Lives Nuclear Wastes (56 minutes)

Managing the Nation's Nuclear Waste (2 hrs.)

Oak Ridge East Fork Poplar Creek Sampling (14 minutes)
The East Fork Poplar Creek, located on the Oak Ridge Reservation in TN, contains mercury and other metals in its waters. Discovered in 1983, these releases are thought to have occurred in the late 1950s or early 1960s. The effects these discoveries have had on the surrounding area and the site are discussed. A detailed synopsis of the sampling process is given. Information is also provided on worker safety and health issues.

Oak Ridge East Fork Poplar Creek (6 minutes)
Cleanup of East Fork Poplar Creek. This video deals with community involvement in working out a plan with DOE to cleanup the creek in the most cost effective way. Phase 1 of the project was conducted in 1992. Phase 2 was conducted in 1997.

Oak Ridge Uranium Waste Minimization (5 minutes)
The video discusses the current method at DOE's Y-12 Plant in Oak Ridge, of disposing of radioactive uranium by-products safely. The goal is to make the process much more efficient.

Safety First: Transportation of Radioactive Materials (approximately 22 minutes) Excellent
The video reviews the history of transporting hazardous waste materials. Radioactivity is defined and transportation regulations and safety measures are listed. The video also addresses generated waste and the reduction of new waste at all DOE sites. This video deals with the progress of the EM's Waste Management program.
The video defines hazardous materials and radioactive materials and discusses them from the perspective of usefulness. It introduces the topics radiation risk, radioactivity in nature, materials packaging categories, federal safety standards, transportation and emergency preparedness. The video setting is a high school class with students initiating questions.

What's Happening in Waste Management? (18 minutes, 6 seconds)
For more than 45 years, the primary mission of DOE and its predecessor agencies has been to maintain a secure national defense through nuclear weapons production, which resulted in the generation of radioactive and hazardous wastes across the DOE complex. As the defense mission of DOE began to change from nuclear weapons production to weapons stewardship and energy research, increased attention was given to waste management and environmental restoration.

RADIATION
A Look at Radiation (10 min.)

Managing Radiation (9:55 min.)

The Radioactive Waste of Karen Kramer (30 min.)

ENVIRONMENTAL LAWS AND REGULATIONS
Our Actions - Our Environment
This videotape provides a good overview of environmental laws and regulations and relates actions at work to actions at home.

Waste Management Complying with the Law: What is Waste? (11:17 min.)
This tape deals specifically with regulations and laws applying to government facilities in the area of waste.

Waste Management Complying with the Law: Management of Hazardous Waste. (10:55 min.)
This tape deals specifically with regulations and laws applying to government facilities in the area of hazardous waste.

Waste Management Complying with the Law: Long-Term Storage
This tape deals specifically with regulations and laws applying to government facilities in the area of long-term storage of various kinds of waste.

Waste Management Complying with the Law: Pollution Prevention
This tape deals specifically with regulations and laws applying to government facilities in the area of pollution prevention.

RISK
Living with Risk (13 minutes)
This is a film about all the risks we live with every day. Several local people speak of the need to enforce rules that are in existence and the need for government leaders to increase communication with the communities involved with environmental risks.

ENVIRONMENTAL JUSTICE (EJ)
Strengthening the Bridge between Economic Development and Sustainable Communities (approximately 10 minutes) Good
This film was edited from the Environmental Justice Black Caucus Forum held in Hilton Head, NC on June 9-12, 1999. The video emphasizes 4 requirements needed to insure EJ for all people. They are: Community involvement, Allocation of funds, Enforcement of regulations, Policy direction and development.

The video presents the argument that national, state, and local environmental policies should emphasize that benefits and risks of the economy and business environment should "accrue to all people fairly." The environmental policy should reflect the needs and interests of all people equitably and is accomplished through community involvement and empowerment, proper allocation of federal and state resources, enforcement of existing regulations and equitable influence of policy direction and development.

CAREER OPPORTUNITIES
I Wanna Clean It Up (31 minutes)
The video delves into the widely diverse career opportunities available in the environmental field through in-depth interviews with people deeply committed to making a difference. From microbiologist to mechanical engineer to wildlife specialist, these young professionals strive to identify and clean up environment hazards that have been accumulating for years, and to develop new methods to eliminate future waste.

OTHER DOE FACILITIES
Hanford B Reactor (approximately 60 minutes) (Note: Background sound distracting at times) Fair
A "home" video of a tour of the Hanford B Reactor. The tour begins in the control room with an interpreter describing the function and purpose of the instruments and panel sections in addition to a brief physical description of the reactor itself and how it operated in plutonium production. Some discussion followed on the University of Chicago reactor, Dr. Fermi, and the early history and stages of graphite reactors. Early safety measures and controls of the nuclear reaction were presented. The xenon problem in the initial nuclear reactions was explained with respect to the coordination of communication between scientists, engineers, physicists, and designers. The tour continued to other display areas with an interpreter that described the fuel cell, the graphite block (thermal shield), masonite (biological shield), water flow, process tubes and the loading of the fuel. The water purification plant, cooling pipes, and retention basin are also described.

Nevada Test Site (approximately 20 minutes) (Note: Narrator speaks very fast; difficult to take notes) Good
The video presents an extensive and detailed description of the Nevada Test Site (NTS). A physical description of the size and environment of NTS is given. In addition, a discussion follows concerning the extent and number of support facilities including office space, print shop, fire station, library, aircraft crash unit, medical facilities, cafeteria and vending. Opportunities for on site recreation exist with bowling, tennis, basketball, movies, pool, baseball, and golf. The infrastructure support includes a motor pool, machine shops, security, paved vs. unpaved roads, heliport, airport, sewage, landfills, and electricity. NTS is a partnership among a number of organizations including Los Alamos National Lab, Sandia, Lawrence Livermore National Lab, Department of Energy, Defense Nuclear Agency and many others. Numerous research and testing facilities exist for such research areas as weapons testing program, tunneling technology, nuclear treaty compliance, non-nuclear defense research, national security, high explosive experiments, alternative energy research, waste packaging and transportation. Environmental Management issues addressed at NTS include: cleanup, identifying and evaluating risk, clean soil technology, health physics, hydrology and geology. Disposal of waste at NTS landfills is discussed. Special topic research facilities include a nuclear reactor, cyrogenic evaluation facility, device assembly, explosive experiments facility. NTS is one of the "guardians of nuclear readiness and response" for national and international purposes.

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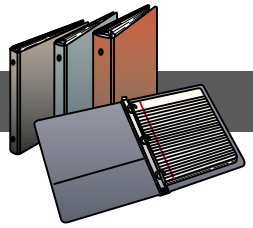
Books & Documents



Books & documents can be requested from the DOE Information Center, 475 Oak Ridge Turnpike, Oak Ridge, TN, unless otherwise noted. Phone (865) 241-4780

General Environmental Reference Documents
DOE, Office of Environmental Management, January 1996, *"Closing the Circle on the Splitting of the Atom: The Environmental Legacy of Nuclear Weapons Production in the United States and What the Department of Energy is Doing About It,"* DOE/EM-0266.

This document describes environmental, safety, and health problems throughout the nuclear weapons complex. It includes an overview of nuclear weapons production and DOE's effort in cleaning up its wastes and byproducts. Two chapters describe DOE's plans and the progress made towards solving these waste problems.

"Oak Ridge, Tennessee-A Citizen's Guide to the Environment, 2001.

The document was written and edited by local citizen volunteers. The guide presents an accurate and balanced view of the environmental conditions of Oak Ridge residential and business areas. It also discusses the health of Oak Ridge citizens. Past contaminant releases from the Department of Energy plants are cited. However, past releases do not pose a current risk to the city. The guide has a section on cleanup and waste management on the DOE reservation. The factual content of the guide was reviewed and verified by a number of experts.

DOE, Office of Environmental Management, October 1999, *"From Cleanup to Stewardship,"* DOE/EM-0466.

This report addresses the nature of long-term stewardship at DOE sites. It describes the scope and breadth of long-term stewardship activities and why these activities are necessary. It summarizes what is currently known about end states, the number and location of DOE sites that require stewardship, the type of stewardship required, which sites are currently carrying out stewardship activities, and planning for long-term stewardship. The report outlines several issues the Department has initially identified that need to be addressed to ensure a successful transition from cleanup to long-term stewardship, and that may be appropriate to consider in the long-term stewardship study required by the settlement agreement to the December 14, 1998 lawsuit with the Natural Resources Defense Council (NRDC). There are also five appendices: (A) Dec. 1998 Lawsuit Settlement Agreement (B) Regulations governing long-term stewardship (C) Methodology (D) Glossary of Terms (E) Site Profiles. Available on the web at *http://www.em.doe.gov/lts* (Stewardship Information Center, Reports on Long Term Stewardship).

"Understanding Radioactive Waste," 4th Edition, Murray, Raymond L., 1994. Battelle Press
505 King Avenue
Columbus, Ohio 43201
Phone: (614) 424-6393 or 1-800-451-3543.

This book presents facts about all aspects of radioactive wastes in a simple, clear and unbiased Manner. The information is intended for students and other interested or concerned members of the public.

Background and History Documents
DOE, 1992, *"Oak Ridge National Laboratory: The First 50 Years (1942-1992)"*, Oak Ridge National Laboratory Review, Vol. 25, Nos. 3 and 4, *http://www.ornl.gov/ORNLReview/previous/prev.htm.*

In the 50 years since Oak Ridge National Laboratory (ORNL) was founded, it has become a full-fledged national socio-technological institute. Its capabilities span the entire range of scientific disciplines, including the social sciences. ORNL addresses an array of problems with the common attribute of significance to both the nation and the world. This book explains the first 50 years of ORNL.

DOE, History Division, October 2002, *"The Manhattan Project: Making the Atomic Bomb,"* DOE/MA-0001.

This book is a short history of the origins and development of the American atomic bomb program during World War II. Beginning with the scientific developments of the pre-war years, the monograph details the role of the U.S. Government in conducting a secret, nationwide enterprise that took science from the laboratory and into combat with an entirely new type of weapon. The monograph concludes with a discussion of the immediate postwar period, the debate over the Atomic Energy Act of 1945 and the founding of the Atomic Energy Commission.

Technical Documents
DOE, Office of Environmental Management, January 1997, *"Linking Legacies: Connecting the Cold War Nuclear Weapons Production Processes to Their Environmental Consequences,"* DOE/EM-0319.

In the aftermath of the Cold War, the United States has begun addressing the environmental consequences of five decades of nuclear weapons production. This report responds to The National Defense Authorization Act for Fiscal Year 1995 and it is DOE's first comprehensive analysis of the sources of waste and contamination generated by the production of nuclear weapons. It also contains information on the missions and functions of nuclear weapons facilities, and on the inventories of waste and

materials remaining at these facilities. The document discusses the extent and characteristics of contamination in and around these facilities.

DOE, Office of Environmental Management, *"Oak Ridge Reservation Annual Site Environmental Report"*, issued annually. A summary of the report is written by Karns High School students. The annual report and the summary are electronically available at *http://www.ornl.gov/aser or www.ornl.gov/Env_Rpt.*

This document is prepared annually to summarize environmental activities, primarily environmental monitoring activities, on the Oak Ridge Reservation and within its surrounding area.

DOE, Office of Environmental Management, *"Remediation Effectiveness Report/CERCLA Five Year Review for the U.S. Department of Energy, Oak Ridge Reservation, Oak Ridge, Tennessee,"* issued annually.

The Remediation Effectiveness Report (RER) is a Federal Facility Agreement document intended to collate all ORR CERCLA decision requirements, compare pre- and post-remediation conditions at CERCLA sites, and present the results of any required post-decision monitoring.

DOE, Office of Environmental Management, *Federal Facility Agreement Annual Progress Report,* issued annually.

This annual progress report satisfies the requirements for the Environmental Management Program by the Oak Ridge Federal Facility Agreement (FFA) to ensure that environmental impacts associated with the ORR are thoroughly investigated and remediated to protect the public health and welfare and the environment. The FFA was established with the U.S. Department of Energy, the U.S. Environmental Protection Agency, and the Tennessee Department of Environment and Conservation.

As required by the FFA, this document contains project descriptions, progress report data, document delivery status, and current contractor lists for East Tennessee Technology Park, the Y-12 National Security Complex, and the Oak Ridge National Laboratory.

League of Women Voters, 1993, Rev. ed., *"The Nuclear Waste Primer: A Handbook For Citizens."* 1-800-225-NWPA or write to OCRWM Information Center, P.O. Box 44375, Washington, D.C. 20026.

The Primer provides information about nuclear waste in the United States-what it is, where it comes from, how it has been managed, and what we can do with it in the future. The book is written for anyone interested in radioactive waste and its effects.

Oak Ridge Site Specific Advisory Board, End Use Working Group, July 1998, *"Final Report of the Oak Ridge Reservation End Use Working Group."*

The Oak Ridge Reservation End Use Working Group (EUWG) , a broadly based volunteer citizens group, was formed in January 1997 to develop and evaluate guidelines and recommendations for future uses of contaminated areas following remediation on the Oak Ridge Reservation. This is the final report containing their eight recommendations.

Oak Ridge Site Specific Advisory Board, End Use Working Group, July 1998, *"Oak Ridge Reservation Stakeholder Report on Stewardship, Volume 1."*

This report describes the need for and the basic elements of a stewardship program, its application to contaminated areas on the Department of Energy (DOE) Oak Ridge Reservation, and the roles and responsibilities of stakeholders. At present, this stewardship program applies to the DOE Oak Ridge Operation's Environmental Management Program. It also provides a summary of the key recommendations for stewardship on the Oak Ridge Reservation. The End Use Working Group Stewardship Committee in collaboration with the Stewardship Committee from the Friends of Oak Ridge National Laboratory prepared this report. Available on the web at *http://www.oakridge.doe.gov/em/ssab* (Publications).

Oak Ridge Site Specific Advisory Board, Stewardship Working Group, December 1999, *"Oak Ridge Reservation Stakeholder Report on Stewardship, Volume 2."*

The recommendations in this report supplement the recommendations in the July 1998 *Oak Ridge Reservation Stakeholder Report on Stewardship*. More detail and a number of additional comments, conclusions and recommendations are contained throughout the text and appendices. The recommendations in this report apply only to the contaminated areas on the Oak Ridge Reservation. While the basic elements of stewardship discussed in Volume 2 (i.e., authority and funding, stewards, operations, physical and institutional controls, information and research) remain much the same as in Volume 1, the relationship among these elements are more fully developed in this report. Some of the unresolved issues associated with stewardship are treated more explicitly than in Volume 1 (e.g., stewardship requirements in CERCLA documents, CERCLA five-year review). Available on the web at *http://www.oakridge.doe.gov/em/ssab* (Publications).

Tennessee Department of Environment and Conservation, DOE Oversight Division, *"Status Report to the Public,"* issued annually.

This report presents mission-related activities on the Oak Ridge Reservation by the U.S. Department of Energy.

Popular Periodicals & Newsletters

Local Periodicals/Newsletters

BWX TYmes
The BWX TYmes is a newsletter published for employees and friends of Y-12 National Security Complex. BWX TYmes 60th anniversary issue (Volume 3, #2, February 2003) presents a brief history of Y-12. The history offers anecdotes, background on General Leslie Groves, information on women and the war, unique skills and contributions of the Y-12 plant.
http://www1.y12.doe.gov/scripts/y12/bwxtymes.cfm

ORNL Reporter
The ORNL Reporter is a newsletter published for employees and retirees of Oak Ridge National Laboratory. The ORNL Reporter, #5, January / February 2003 is the ORNL 60th anniversary issue. The issue reviews the naming and numbering of the buildings at ORNL and recalls transportation to ORNL in the early years. The early conditions and atmosphere of ORNL is presented in an anecdotal manner in this issue.
http://www.ornl.gov/reporter

Oak Ridge Site Specific Advisory Board Advocate
Published quarterly by the Oak Ridge Site Specific Advisory Board (ORSSAB). The newsletter provides information about the ORSSAB's most current activities, including advice and recommendations provided to the Department of Energy's (DOE) Environmental Management (EM) Program. It also highlights recent activities that the Board has been studying pertaining to the DOE EM program. The Advocate is available at no cost. To add your name to the mailing list, contact
Pete Osborne, Public Affairs Coordinator at the SSAB Support Office
Phone: (865) 576-1590 or 1-888-382-6938
Fax: (865)576-5333
E-mail: 5PL@BechtelJacobs.org
or contact the
DOE Information Center
Phone: (865)241-4780
Fax: (865) 574-3521
E-mail: doeic@comcast.net.

Public Involvement News
Published monthly by the DOE-Oak Ridge Operations Office of Public Affairs, *Public Involvement News* is a primary source of timely information for Oak Ridge stakeholders. The newsletter format publication provides information on public meetings, document comment periods, and the CERCLA Administrative Record. In addition, the newsletter publishes DOE announcements and additional public involvement opportunities. The monthly meeting calendar lists important meetings, events, and public comment period dates. *Public Involvement News* is available at no cost.
To be added to the mailing list, call (865) 576-4006 or 1-800-382-6938.

National Periodicals/Newsletters

DOE Pulse
Every 2 weeks, *DOE Pulse* "highlights work being done at DOE's national laboratories...cutting-edge research spanning DOE's science, energy, national security, and environmental quality missions."
No charge, available only on the internet. Notification by email of updates available.
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Phone: (202)586-5806
E-mail: jeff.sherwood@hq.doe.gov
http://www.ornl.gov/news/pulse/pulse_home.htm

DOE This Month
Published monthly for DOE employees and affiliates and available to others by paid subscription. Private sector orders through the U.S. Department of Energy Office of Public Affairs, PA-40,
Washington, DC 20585
Phone: (202) 586-2050
E-mail: *doe.thismonth@hq.doe.gov*
Available online free of charge at *http://www.energy.gov* (Subscriptions, online newsletters).

EM Progress
A quarterly report from the U.S. DOE's Office of Environmental Management. There is no charge and it is available on the internet or by hard copy.
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Office of EM-22
U.S. Department of Energy
Washington, DC 20585
Phone: (202) 863-5073
Fax: (202) 554-3267
E-mail: Kaye.Sylvester@em.doe.gov
http://www.em.doe.gov/emprog

EPA Newsletters
A listing and description of more than 50 newsletters published by EPA is available at *http://www.epa.gov/epahome/newslett.htm*, or send e-mail to *public-access@epamail.epa.gov* to subscribe.

ESAVE (Environmental Stewardship and Value Engineering formerly Pollution Prevention Advisor)
Published by the U.S. Department of Energy (DOE), Office of Defense Programs. The newsletter highlights successful pollution prevention strategies, technologies, programs, and projects that have been implemented throughout the weapons complex and private industry. It provides technical details and points of contacts for innovative approaches that have applications at other sites endeavoring to incorporate

environmental stewardship and value engineering into their operations.
No charge, published 3 times a year.
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Initiatives in Environmental Technology Investment
This newsletter "promotes information exchange among the Office of Science and Technology, other DOE offices and sites, industries, and other agencies concerned with technology development and deployment."
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The International Radioactive Exchange
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Information at
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Nuclear Waste News
Covers current international issues on nuclear waste generation, packaging, transportation, processing, research, and disposal.
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The official journal of the Risk Assessment & Policy Association, Risk is a "refereed, interdisciplinary quarterly that explores public and private efforts to manage science and technology for net reduction in the probability, severity, and aversive quality of health, safety and environmental impacts of natural and artificial hazards."
Published quarterly/ $55 year
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RISK Newsletter
A quarterly publication of the Society for Risk Analysis.
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E-mail: *sra@burkinc.com*
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http://www.sra.org/news.htm.

Weapons Complex Monitor: Waste Management & Cleanup
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Resource Kits

Introducing a new *Radiation Resource Kit for Teachers*

How big a risk does radiation pose to our families, our environment and to future generations? What should individuals and society do to ensure that the benefits of radiation are not outweighed by the risks? These questions and others are answered in a new "Understanding Radiation: A Resource Kit for Teachers" that is now available free to high school teachers to help educate students about radiation and risk.

The *Understanding Radiation Resource Kit* contains:

- Two 10-minute videos:
  "*A Look at Radiation*" an overview of radiation as part of our everyday lives
  "*Managing Radiation*" a look at how federal, state, and local agencies manage radiation.

- Guidebook, *"Understanding Radiation In Our World*" a 60-plus page book with in-depth discussion of radiation related issues.

- A Companion Guide for high school science teachers with suggested classroom activities and a lesson plan on radiation related risk (aligned with learning goals in national science education standards).

- Overheads and Handouts a set of overheads (16) and handouts (14) for use in conjunction with the risk analysis lesson plan.

- Poster, "*Nuclear Science Wall Chart*" a poster (11" x 14") summarizing nuclear science issues (produced by the Contemporary Physics Education Project and the Lawrence Berkeley National Laboratory).

This kit was developed through a cooperative agreement between the National Safety Council's Environmental Health Center and the U.S. Environmental Protection Agency.

Ordering Information

To order your free *Understanding Radiation Kit* mail or fax the following information: Name, School, Address, Phone, Email and Grade taught to:

Understanding Radiation Kit
National Safety Council/Environmental Health Center
1025 Connecticut Avenue, NW #1200
Washington, DC 20036
Fax: (202) 293-0032 or
E-mail your request to: *cohend@nsc.org*. or request online at *http://www.nsc.org/ehc/rad.htm.*

Understanding Long-Term Stewardship: Resource Kit for Teachers (in development)

The Long -Term Stewardship Resource Kit contains a video, a teacher's guide with lesson plans and activities, overheads, classroom handouts and a classroom poster summarizing long-term stewardship for the middle school and high school student. In addition, the Resource Kit provides a combined summary of two landmark reports: *Oak Ridge Reservation Stakeholder Report on Stewardship, Volumes 1 and 2.*

The Education Task Team of the Oak Ridge Site Specific Advisory Board Stewardship Committee developed the Resource Kit. The goal for the Resource Kit is to introduce long-term stewardship principles to middle school and high school students and educate students in their future long-term stewardship responsibilities as voting members of society.

The Stewardship Resource Kit is available by contacting:

Pete Osborne
Oak Ridge Site Specific Advisory Board
P.O. Box 2001
EM-90
Oak Ridge, TN 37831
Phone: 865-576-1590
Fax: 865-576-5333
Web: *http://www.oakridge.doe.gov/em/ssab*
E-mail: 5PL@BechtelJacobs.org
Or
DOE Information Center
Phone: 865-241-4780
Fax: 865-574-3521
E-mail: *doeic@comcast.net*

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Fact Sheets

Just the facts and plenty of them make the Environmental Management (EM) Program's "EM Fact Sheets" a quick and easy way to gain a broad overview of the numerous EM projects. The first titles came out in fall 1996, and the collection has grown steadily since. Fact sheets cover project specific to more general information about the EM program. Fact sheets are available at *http://www.bechteljacobs.org/facts/facts-or.htm*. If you're not sure what fact sheet you're looking for you may call the DOE Information Center at (865) 241-4780.

We have included seven fact sheets that provide you with a broad overview of the Oak Ridge Reservation: (1) Oak Ridge Accelerated Cleanup Plan (2) Oak Ridge Site Specific Advisory Board (3) Federal Facility Agreement (4) Administrative Record for the Oak Ridge Environmental Management Program (5) East Tennessee Technology Park (6) Oak Ridge National Laboratory and (7) Y-12 National Security Complex.

Below is a listing of the DOE fact sheets that are available.

ETTP Watershed

Decontaminating and Decommissioning ETTP Gaseous Diffusion Buildings (March 2003)
ETTP Auxiliary Facilities Demolition Project: Group 1 Buildings (August 2001)
ETTP Auxiliary Facilities Demolition Project: Group 2 Buildings (April 2003)
ETTP Zone 1 Record of Decision (March 2003)
K-1070-A Burial Ground Project (October 2002)
K-1070-C/D and Mitchell Branch Plumes (October 2002)
K-1070-C/D G-Pit and Concrete Pad Project (October 2002)
K-1401/K-1420 Sumps Project (February 2002)
K-25/K-27 Building Demolition Project (March 2003)
Quick Facts: East Tennessee Technology Park (March 2003)
East Tennessee Technology Park (March 2003)

ORNL Watersheds

Bethel Valley Watershed Overview (September 2001)
Federal Facility Agreement Tanks Program (June 2002)
Melton Valley Overview (September 2001)
Molten Salt Reactor Experiment Facility (April 2002)
Melton Valley ROD Explanation of Significant Differences (October 2002)
Quick Facts: Oak Ridge National Laboratory Watershed (May 2003)
Remediating Hydrofracture Wells at ORNL (April 2002)
Surface Impoundments Operable Unit (September 2001)
Transuranic Waste Treatment at Oak Ridge National Laboratory (March 2003)

Y-12 Watersheds

Bear Creek Valley Watershed Record of Decision (September 2001)
Boneyard/Burnyard Waste Site Cleanup (April 2003)
Quick Facts: Y-12 National Security Complex (March 2003)
Y-12 East End VOC Groundwater Removal Action (September 2001)

Waste Management

Depleted Uranium Hexafluoride Disposition Program (April 2003)
Environmental Management Waste Management Facility (March 2002)
Mixed Waste Treatment on the Oak Ridge Reservation (February 2002)
Treating Toxic Wastes with the TSCA Incinerator (October 2002)
Waste Acceptance Criteria for the Enviromental Management Waste Management Facility (March 2002)

General

Administrative Record for the Oak Ridge Environmental Management Program (March 2003)
Common Acronyms (April 2003)
Decontamination & Decommissioning Program (March 2002)
Federal Facility Agreement (February 2003)
Key Contacts for the Oak Ridge Environmental Management Program (January 2003)
Key Contacts for the Paducah Project (January 2003)
Key Contacts for the Portsmouth Project (January 2003)
Lower Watts Bar Reservoir Remedial Action (April 2003)
National Environmental Policy Act (NEPA) (April 2003)
Oak Ridge Accelerated Cleanup Plan (March 2003)
Oak Ridge Site Specific Advisory Board (ORSSAB) (July 2002)
Public Involvement Information Resources (July 2002)
Remediation Effectiveness Report (September 2001)
What Is Environmental Justice? (Spring 1997)

These and additional fact sheets are available at the DOE Information Center, 475 Oak Ridge Turnpike, Oak Ridge, Tenn.

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March 2003

QUICK FACTS

Oak Ridge Environmental Management Program

East Tennessee Technology Park

East Tennessee Technology Park at a Glance

- The Oak Ridge Gaseous Diffusion Plant began operations in World War II as part of the Manhattan Project. Its original mission was to produce uranium enriched in the 235U isotope for use in atomic weapons. The plant produced enriched uranium for the commercial nuclear power industry from 1945 to 1985 and was permanently shut down in 1987. Restoration of the environment, decontamination and decommissioning of the facilities, and management of the legacy wastes have since been major activities. Reindustrialization of the site began in 1996, and the East Tennessee Technology Park (ETTP) was established at the site in 1997.
- ETTP is located in the Roane County portion of Oak Ridge, Tennessee, approximately 13 miles west of downtown.
- The U.S. Department of Energy's (DOE's) long-term goal for ETTP is to convert the site into a private industrial park. The site is undergoing environmental cleanup, which is now expected to be completed on an accelerated schedule. The new accelerated closure plan will achieve cleanup eight years ahead of the original plan and, therefore, reduce environmental and safety risks more quickly and will save in maintenance costs. The reuse of key site facilities through title transfer is part of the closure plan for the site.
- The accelerated cleanup approach offers uncontaminated buildings, suitable for immediate private industrial use, for title transfer to the Community Reuse Organization of East Tennessee (CROET). CROET then subleases this property to private industry. It also recruits business to the area. Any facilities at ETTP that remain unused will be demolished and, after cleanup analysis, the land will be cleared and made available for future commercial use.
- Bechtel Jacobs Company LLC, the Oak Ridge Reservation cleanup contractor for DOE, employs about 550 people at ETTP. Two other prime contractors at ETTP employ about 1,000 more people: BNFL Inc., which is responsible for decontamination and decommissioning (D&D) of three large process buildings (approximately 900 people); and Operations Management International, Inc., which manages, operates, maintains, and rehabilitates utility systems and infrastructure at ETTP (approximately 100 employees). About 400 additional people work for companies leasing space on-site for private commercial purposes.

Environmental Cleanup Projects

K-25/K-27 D&D Project

Following a public meeting in August 2001 and public review that ended in September 2001, the DOE Oak Ridge Operations Manager approved an Action Memorandum in February 2002 that selected a cleanup alternative for the K-25 and K-27 buildings at ETTP. The Environmental Protection Agency and the Tennessee Department of Environment and Conservation have endorsed this action. The alternative chosen involves sending radioactive wastes that meet the acceptance criteria to the new

Environmental Management Waste Management Facility (EMWMF), located near the Y-12 National Security Complex, and sending other radioactive waste to the Nevada Test Site. D&D project activities that will be implemented under the preferred alternative include characterization, hazardous material removal, equipment removal, building demolition, waste and material disposition, and site stabilization. The demolition process will leave the basement slabs and retaining walls in place in a structurally sound condition. The slab and underground soil and utilities will be address in a future Record of Decision for the ETTP site. The estimated cost for this alternative is $294 million with completion by the end of 2008. The footprint of the U-shaped K-25 Building occupies about 40 acres near the center of ETTP. The K-27 Building is a rectangular building that occupies approximately 374,000 square feet. Except for shape and size, the two buildings are similar with respect to materials and construction techniques. Both buildings have radioactive contamination and hazardous materials that are contained by the building structures. DOE recognizes that the K-25 Building played an important part in the history of the Manhattan Project and desires to preserve its history. Following the National Historic Preservation Act, DOE is consulting with state, federal, and local historic preservation officials to identify options. Completion of the consultation will result in a Memorandum of Agreement that identifies actions that will interpret the historical significance of the K-25 Building.

ETTP Auxiliary Facilities Demolition Project: Group 1 Buildings
DOE has completed the demolition of five buildings at ETTP, known collectively as the Group 1 Buildings. The Group 1 Buildings include the K-725 Beryllium Building and the nearby K-724 Storage Building, the K-1131 Feed and Tails Building, the K-1410 Plating Facility, and the adjacent K-1031 Warehouse. These auxiliary facilities were selected for dismantlement because of their poor physical condition, proximity to surface water or other structures, expense of surveillance and maintenance activities, or a combination of these. Demolition was completed in April 1999.

ETTP Group 2 Buildings, Main Plant Demolition
DOE has completed the demolition of 10 facilities, known collectively as the Group II Buildings Phase I project. The facilities include the K-1045-A Waste Oil Burning Pit, K-1408 Tire and Battery Shop, K-1300 Stack, K-1301 Fluorine Production Facility, K-1302 Fluorine Storage Building, K-1303 Fluorine Facility, K-1404 Acid Storage, K-1405 High Temperature Laboratory, K-1407 Laboratory and Storage Facility, and K-1413 Engineering Laboratory. Demolition was completed in September 2002.

ETTP Group 2 Buildings (K-1064 Facilities), Phase II
DOE has initiated demolition of 18 facilities located near the K-1064 Peninsula. The facilities consist of pump houses, a cooling tower (K-801-H), old storage facilities (K-1025 A-3), and miscellaneous maintenance areas.

ETTP Remaining Facilities Demolition: Group 2 Buildings
Under the Engineering Evaluation/Cost Analysis for the K-25 Auxiliary Facilities Demolition Project Group 2 Buildings, all remaining (approximately 500) above-ground facilities, where demolition is not ongoing, will be demolished by groupings. These facilities include buildings, tanks, sheds, and other structures. Most of these facilities have actual or potential elevated concentrations of radiological and/or other hazardous substances. Demolition will include decontamination, segregation, and characterization of demolition waste streams as well as disposal in appropriate Oak Ridge Reservation or other disposal facilities.

K-1070 C/D G Pit and Concrete Pad Project
Activities at ETTP generated many types of waste, including hazardous, radioactive, and classified wastes that were disposed of at the K-1070-C/D site from 1975 to 1989. G-Pit was originally designed as an organic solvent disposal pit. The G-Pit and the Concrete Pad area were grouped together for remedial action which included a source removal at G-Pit (where the majority of the contaminant release is attributed) and capping the concrete pad at K-1071. The concrete pad was covered with a soil cap in April 1999, and the G-Pit removal was completed in January 2000. Thermal treatment of the contaminated soil was completed in April 2001, and the treated waste was disposed of in the EMWMF in April 2002.

K-1070-A Burial Ground Project
The K-1070-A Burial Ground was opened just west of the site in the 1950s to receive wastes from the gaseous diffusion plant. The one-acre burial ground was used for underground burials of unclassified, contaminated materials. Burials consisted largely of uranium-contaminated materials. DOE, with public input, selected waste removal and disposal as the cleanup alternative. Remediation work began in June 2002 and was scheduled to be completed in April 2003.

K-1070-C/D and Mitchell Branch Plumes
ETTP has two areas— K-1070-C/D and Mitchell Branch— where previous DOE operations resulted in groundwater contamination. These defined areas of groundwater containing contamination, or "plumes," have been investigated and identified. Geological mapping shows that the Mitchell Branch plume currently extends to the lower reaches of Mitchell Branch, which feeds into Poplar Creek. Poplar Creek joins the Clinch River at the southwest corner of ETTP. Geological mapping shows that the K-1070-C/D plume is currently migrating west from the K-1070-C/D burial ground. DOE installed a groundwater collection system in the K-1070-C/D area. The groundwater is piped to the Central Neutralization Facility, where it is treated before being discharged. A groundwater collection system was also installed at Mitchell Branch.

K-1417-B Drum Storage Yard Project
The K-1417-B Drum Storage Yard was used to store stabilized pond and raw sludge generated during the gaseous diffusion process. Construction began in April 1984 when the K-1417-B Yard was graded and paved with asphalt, and facilities were constructed to fill and store drums of sludge. Drums were placed into new containers and removed from the K-1417-B Yard for safe, temporary storage. The yard was closed in May 1999.

K-1401/K-1420 Sumps Project
During past operations, Building K-1401 served as a maintenance facility to clean equipment needed in the gaseous diffusion process, and Building K-1420 was used for equipment decontamination, uranium recovery, and metal finishing. The K-1401/K-1420 Sumps removal action was a time-critical removal action designed to collect and treat contaminated groundwater from the sumps located in the basements of Buildings K-1401 and K-1420. The sumps (pits or trenches) temporarily store fluids at the lowest point of a drainage system. The drainage systems at K-1401 and K-1420 use sump pumps to remove the fluids.

Ponds Project
Two ponds at ETTP, known as K-901-A (located in the western end) and K-1007-P (located in the southern end), were used as holding ponds during past operations. Removal work at the K-901-A Pond consisted of draining the pond and removing fish and debris; this work began August 1997 and ended January 1998. The field investigation of the K-1007-P Ponds included sampling, a human health risk assessment, and an ecological risk assessment. Although draining of this pond had been originally proposed as a removal action, a subsequent decision was made to include these ponds in future CERCLA decision documents.

Toxic Substances Control Act (TSCA) Incinerator
ETTP is also home to DOE's TSCA Incinerator, the only U.S. facility permitted to incinerate certain radioactive and/or hazardous wastes. The facility, located on the eastern edge of the site, has operated since 1991.

(Note: All actions described are subject to state and federal regulations governed by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA) and the National Environmental Policy Act (NEPA).

For more information, contact the DOE Public Affairs Office at (865) 576-0885 or 1-800-382-6938, option 1.

May 2003

QUICK FACTS

Oak Ridge Environmental Management Program

Oak Ridge National Laboratory

Melton Valley and Bethel Valley

Oak Ridge National Laboratory at a Glance

- Oak Ridge National Laboratory (ORNL) is an internationally renowned research facility with an ongoing mission of developing technologies and products for government and civilian uses.
- The Waste Management Program at ORNL manages radioactive, hazardous, mixed and transuranic wastes in solid, liquid and gaseous forms.
- The Environmental Management Program is tasked with the investigation and remediation of several hundred contaminated areas in and around the site. Many of these contaminated areas are assigned to two major geographic groupings: Melton Valley and Bethel Valley in the White Oak Creek Watershed. The main plant area of ORNL is located in Bethel Valley (shown in photo above); a majority of ORNL's waste management areas are located in neighboring Melton Valley (not pictured).

Environmental Cleanup Projects

- Waste units at ORNL include shallow burial trenches, landfills, tanks, impoundments, seepage pits and trenches, hydrofracture wells and grout sheets, underground pipelines and associated leak sites, and structures.
- Past releases from waste units have contaminated surrounding environmental media, such as soil, sediment, surface water, and groundwater.
- The primary contaminants of concern are radionuclides such as tritium, strontium-90, and cesium-137.
- Environmental cleanup was managed in the 1990s through a series of early/removal actions. Cleanup is now proceeding primarily under comprehensive agreements called records of decision (RODs). The Melton Valley ROD (September 2000) and the Bethel Valley ROD (May 2002) specify selected, interim remedial actions for 300-plus waste units and for soil and sediment aimed at reducing contamination levels in groundwater.

- These remedial actions will cost over $300 million to complete.

- Remedial actions specified in the Melton Valley ROD are scheduled to be completed by 2006; those in the Bethel Valley ROD are scheduled to be completed by 2014.
- Remedial actions in the Melton Valley ROD are well under way. An example is completion of the Intermediate Holding Pond soil excavation (16,800 cubic yards) in October 2002.

- About 32,000 cubic yards of contaminated soil will be removed from the ORNL main plant area and disposed on the Oak Ridge Reservation. About half of that is contaminated floodplain soil and sediment. Most of the remainder is contaminated surface soil (12,000 cubic yards), while a smaller amount, 2,000 cubic yards, is considered deep soil. The deep soil volume estimate is highly uncertain--a study is being conducted to develop a more accurate estimate.

- A total of about 78,500 cubic yards of contaminated soil will be removed from contaminated areas around the main plant area and in Melton Valley. Some of this soil will be used as contouring fill for one or more of the multilayer caps being designed for use on landfills and burial grounds to isolate the waste buried there.

- Multilayered caps are being placed on burial grounds in Melton Valley that cover more than 150 acres. These caps are designed to isolate the waste stored there and prevent the leaching of contaminants into soil and groundwater around these sites.

- More than 70 formerly used buildings are designated for decontamination and demolition. An exception is the Graphite Reactor, which has been designated as a National Historical Landmark, and will be preserved.

- Residual sediment was removed from 10 gunite tanks in the Bethel Valley ROD for later treatment, and the tanks were stabilized in place with grout. Several other FFA tanks were remediated similarly and grouted in place.

- More than 1,000 obsolete or poor-quality monitoring wells are being abandoned in place. Part of that process involves filling the wells with a grouting material to preclude further use.

- Contaminated groundwater from what is known as the Core Hole 8 plume, located in the central part of the main plant area, will be extracted by four wells and seven sumps at a combined rate of approximately 100 gallons per minute. The collected water will be treated to remove the radionuclides uranium and strontium. Existing sumps will continue to be used to collect water for removal of strontium and mercury.

- Contaminated groundwater from an area known as the Volatile Organic Compound plume will be treated by a method referred to as enhanced *in situ anaerobic bioremediation*. This means that biological agents will be used to treat the water where it is — without extraction or excavation.

- Buried transuranic wastes in 22 unlined trenches in SWSA 5N in Melton Valley will be retrieved and, where necessary, repackaged for transport to off-site disposal. This repackaging will take place at the new Transuranic Waste Processing Facility under construction in Melton Valley.

Note: *All proposed actions are subject to review by state and federal regulators and the public as prescribed in the Federal Facilities Agreement for the Oak Ridge Reservation and governed by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA) and the National Environmental Policy Act (NEPA).*

For more information, contact the DOE Public Affairs Office at (865) 576-0885 or 1-800-382-6938, option 1.

March 2003

QUICK FACTS

Oak Ridge Environmental Management Program

Y-12 National Security Complex

Bear Creek Valley, Upper East Fork Poplar Creek, and Chestnut Ridge

Y-12 National Security Complex at a Glance

- The Y-12 National Security Complex is located south of Oak Ridge and covers approximately 811 acres. It was built in 1943 to process uranium for the first atomic bomb. Since then, its mission and capabilities have changed significantly.
- The Y-12 missions are surveillance of weapons through disassembly, inspection, and documentation of findings; production of hardware to support laboratory tests required for stockpile certification; dismantlement of retired weapons; modification, repair, or replacement of secondaries as required; management and storage of nuclear materials; and stewardship of required technology, critical skills, and physical assets.
- The Y-12 Complex is a manufacturing and development facility and is also a repository for the supply of enriched uranium. It is managed by the Y-12 Area Office of DOE's National Nuclear Security Administration.
- The Environmental Management Program is tasked with the investigation and remediation of contaminated areas in and around the site.

Most of these contaminated areas are assigned to three geographic groupings: Bear Creek Valley, which runs west from Y-12; Upper East Fork Poplar Creek (UEFPC) characterization area, which covers the main Y-12 Complex area;and Chestnut Ridge, which covers the area south of the Y-12 Plant.

Environmental Cleanup Projects

- Groundwater pump-and-treat technology is currently being used to reduce health and environmental risks posed by volatile organic compound contamination migrating off-site from Y-12. Bench scale tests of bioremediation technologies have also been performed successfully and may be used to degrade the source area and contamination plume in a subsequent action.
- The Reduction of Mercury in Plant Effluents Program has made significant progress in achieving a greater than 90 percent reduction in the release of mercury from surface waters via UEFPC. Additional actions are planned under the UEFPC Interim Surface Water Record of Decision (ROD) to reduce mercury through treatment of contaminated spring

water, repair of leaking storm sewers and removal of contaminated sediments.

- Treatability studies are currently being conducted to identify innovative technologies for treatment of soils contaminated with mercury and in situ (in place) stabilization of mercury source areas.

- The Upper East Fork Final Surface Water ROD will document decisions for final remediation of UEFPC surface water.

- The Phase 2 Bear Creek Valley ROD will document decisions for remediation of the burial grounds.

- The Phase 3 Bear Creek Valley ROD will document decisions for remediation of groundwater.

- The Chestnut Ridge ROD will document decisions for remediation of soils, surface water and groundwater.

- Hydraulic isolation at the Boneyard/Burnyard (BY/BY) was completed in November 2000. Excavation and disposal of the contaminated debris and soils started in May 2002 and was completed in October 2002. The intent of the hydraulic isolation and debris/soil removal is to reduce uranium releases to Bear Creek.

- Uranium contaminated groundwater is being treated before it enters Bear Creek by passing it through media to remove the uranium.

- Construction has been completed on the Environmental Management Waste Management Facility, which began accepting waste in May 2002.

- Current plans include the removal of up to 90,000 cubic yards of contaminated soils in the Y-12 Main Plant area. Soils remediation decisions will be made in the UEFPC Soils Remediation ROD.

For more information, contact the DOE Public Affairs Office at (865) 576-0885 or 1-800-382-6938, option 1.